



#13 9/1/05/2806
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**Request
For
Continued Examination (RCE)
Transmittal**

Address to:
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Alexandria, VA 22313-1450

Application Number	09/642,267
Filing Date	08/18/2000
First Named Inventor	Goguen et al.
Art Unit	2857
Examiner Name	Baran
Attorney Docket Number	100157-142

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. See Instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. **Submission required under 37 CFR 1.114** Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

- a. ☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.
- i. ☐ Consider the arguments in the Appeal Brief or Rely Brief previously filed on _____
- ii. ☐ Other _____
- b. ☒ Enclosed
- i. ☒ Amendment/Reply
- ii. ☐ Affidavit(s)/ Declaration(s)
- iii. ☐ Information Disclosure Statement (IDS)
- iv. ☐ Other _____

2. **Miscellaneous**

- a. ☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)
- b. ☐ Other _____

3. **Fees**

- The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.
- The Director is hereby authorized to charge the following fees, or credit any overpayments, to Deposit Account No. 08-0219
- i. ☒ RCE fee required under 37 CFR 1.17(e) 08/19/2003 MBIZUNES 00000167 080219 09642267
- ii. ☒ Extension of time fee (37 CFR 1.136 and 1.17) 01 FC:1801 750.00 DA
- iii. ☐ Other _____
- b. ☐ Check in the amount of \$ _____ enclosed
- c. ☐ Payment by credit card (Form PTO-2038 enclosed)

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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

Name (Print/Type)	Rajesh Vallabh	Registration No. (Attorney/Agent)	35,761
Signature	<i>Rajesh Vallabh</i>	Date	08/14/2003

CERTIFICATE OF MAILING OR TRANSMISSION

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Name (Print/Type)	Jody Begley	Date	08/14/2003
Signature	<i>Jody Begley</i>		

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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#14

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

8/14/03

Applicant: Goguen et al.

Examiner: Baran

Serial No.: 09/642,267

Art Unit: 2857

Filed: August 18, 2000

For: Output Performance Trends of a Mass Storage System

9/5
MSI

CERTIFICATE UNDER 37 C.F.R. § 1.8(a)

I hereby certify that this correspondence, and any enclosures referenced herein, is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450

on Aug 14, 2003.

Jody Begley

Assistant Commissioner for Patents
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RESPONSE TO ADVISORY ACTION

In the Advisory Action dated August 12, 2003, the Examiner maintained the rejections of the claims in the final office action, in which (1) Claims 1, 2 and 5-9 were rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 5,623,598 issued to Voigt et al. ("Voigt") in view of U.S. Patent No. 6,128,717 issued to Harrison et al. ("Harrison"), and (2) Claims 3 and 4 were rejected under § 103(a) as being unpatentable over Voigt in view of Harrison and further in view of U.S. Patent No. 5,586,059 issued to Oshelski et al. ("Okhelski"). Reconsideration and allowance of the application are requested.

The Examiner rejected Claims 1, 2 and 5-9 under 35 U.S.C. §103(a) as being obvious over Voigt in view of Harrison. The Examiner contends that Voigt discloses all the limitations of independent Claim 1 except for a controller connected to a plurality of host computers. The Examiner states that Harrison discloses a controller (interface structure 14) which is connected to a plurality of host computers (i.e., network environment).

The present invention is directed to a method of presenting system performance to a user in a mass storage system having multiple disk drive storage elements controlled by a disk drive controller. During operation, the disk drive controller receives commands and data from and returns data to a plurality of host computers. To determine performance of the system, the host computers can be operated to test the controller and the disk drive elements. Accordingly, potential problems that can create a bottleneck on those communication lines connected from the controller to either the disk drive elements or the hosts can be identified.

As noted in the specification on page 1, it is well known in the field to measure, typically using a single parameter, the instantaneous or average response time of a system. Typically, a host computer outputs one or more I/O requests to the disk drive controller, and then measures the time for a response to be received from the disk drive controller. This time duration, while representative of the response of a specific read or write command to the disk drive system, is most often not representative of the actual performance that can be obtained from the system.

The performance of a large storage system is particularly difficult to measure since more than one of the host computers, which connect to the disk drive controllers, can operate at the same time, in a serial or in a parallel fashion. As a result, a plurality disk drive elements, usually arranged in a disk drive array, operating in either an independent fashion, a RAID configuration, or a mirrored configuration, e.g., can have a significant yet undetectable bandwidth or operational problem that cannot be addressed or discovered when commands are sent only from a single host computer.

Voigt discloses a system for identifying methods of improving performance in a data storage system having a single host computer station connected to a data storage system having an array of storage disks. Voigt discloses selecting a performance metric to be measured during operation of the data storage system. Voigt then samples the performance metric during operation of the data storage system either in the data storage system 14 or in the single host computer station 12. (columns 5-6).

Voigt does not disclose or in any way suggest a disk drive controller receiving commands and data from and returning at least data to a plurality of host computers. Furthermore, Voigt does not disclose or in any way suggest (1) executing at a plurality of host computers a test request by sending commands to the mass storage system, or (2) accumulating, at the executing host computers, data regarding performance of the mass storage system in response to the requests sent by the host computers. As previously noted, significant performance issues (e.g., undetectable bandwidth or operational problems) cannot be addressed or discovered when commands are sent only from a single host computer. Voigt does not even recognize these issues.

The Examiner cited Harrison as disclosing a controller connected to a plurality of host computers. Harrison discloses a method of recording data onto a disk drive by categorizing the data into data types. Harrison is not directed to solving or even recognizes the problem of determining or presenting system performance to a user of a mass storage system, much less the problems associated measuring performance using a single host computer. In the Advisory Action, the Examiner cites col. 5, lines 46-53 of Harrison for teaching that providing performance data for a plurality of hosts can enhance the overall performance of a storage system. The cited portion of Harrison states as follows:

A more specific object of the present invention is to enhance the performance of a hard disk drive by providing a novel internal data object analysis process which analyzes data objects being sent to the disk drive from a host or hosts and stores the data objects at storage locations of the disk drive which provide appropriate access performance, depending upon determined particular types of the data objects.

This portion of Harrison only discloses some internal data object analysis process that analyzes data objects being sent to a disk drive from hosts and stores the data objects at particular storage locations of the disk drive to provide "access performance" depending on the type of data object. This does not in any way relate to (1) executing at a plurality of host computers a test request by sending commands to the mass storage system, or (2) accumulating, at the executing host computers, data regarding performance of the mass storage system in response to the requests sent by the host computers. There are no test requests from host computers, and there is no accumulation of data regarding performance of the storage system in response to the requests, much less accumulation of performance data at the host computers. In fact, it is unclear whether there is any data on performance in Harrison.

Harrison is therefore not properly combinable with Voigt. Combining Voigt and Harrison is the kind of hindsight combination that courts have repeatedly held is improper and impermissible. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In the present application, the prior art provides no teaching, suggestion or motivation to combine the performance improvement system of Voigt with the data recording and categorizing system of Harrison. Furthermore, neither reference recognizes the problems solved by the present invention. As a result, there would have been no motivation to combine Harrison with Voigt, and the combination of these references is thus improper and fails to make a prima facie showing of obviousness.

Even assuming, for the sake of argument, that Voigt and Harrison are properly combined under § 103, the combination does not disclose each and every element of the claims. The Examiner contends that Voigt discloses executing at a single host computer a test request by sending commands to a mass storage system, and accumulating at the single host computer data regarding performance of the mass storage system. The

Examiner further contends that Harrison teaches a plurality of host computers connected to an interface structure, and that one could combine the teachings of the references. As noted above, Harrison, however, does not disclose or suggest or in any way relate to either (1) executing at a plurality of host computers a test request by sending commands to the mass storage system, or (2) accumulating, at the executing host computers, data regarding performance of the mass storage system in response to the requests sent by the host computers. Harrison simply discloses as the Examiner contends a plurality of host computers connected to an interface structure. Thus, if Harrison were combined with Voigt as suggested by the Examiner, there would be a plurality of host computers, one of which would be Voigt's host computer, which would be the only computer executing a test request and accumulating performance data thereat. The other hosts would not be performing these functions. The claims would be distinguishable from this combination teaching because they require (1) executing at a plurality of host computers a test request by sending commands to the mass storage system, or (2) accumulating, at the executing host computers, data regarding performance of the mass storage system in response to the requests sent by the host computers. Since each and every element of the claims are not disclosed by this combination of references, the rejection fails under § 103, and should be withdrawn.

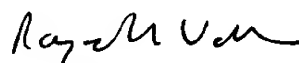
The remaining claims in the application are all dependent on Claim 1 and are also similarly allowable over the Voigt and Harrison references.

The Examiner rejected Claims 3 and 4 under § 103(a) as being unpatentable over Voigt in view of Harrison and further in view of Oshelski. Oshelski does not cure the deficiencies of Voigt and Harrison noted above. With respect to Claim 3, the Examiner contends that Oshelski discloses extracting and storing data in databases, and accessing the databases to analyze and display the data in user specified formats. Oshelski is directed to an automated data management system for analysis and control of photolithography equipment. Oshelski does not in any way relate to presenting system performance of a mass storage system. The reference does not teach or in any way

suggest combination with Voigt and Harrison, making the combination improper under § 103(a).

Claims 1-9 are pending in the present application. As the application is now believed to be in condition for allowance, issuance of a Notice of Allowance is respectfully requested.

Respectfully submitted,



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